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DOCUMENT DELIVERY SYSTEM IN DIGITAL ENVIRONMENT

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[*Today information technology has greatly enhanced access to information by automating its organization, storage and retrieval. Lots of work has been done in the field of document delivery system also. This paper discusses the pros and cons of document delivery system in digital environment. It mainly focuses on the various kinds of technologies involved in document delivery system. Also describes issues like intellectual property rights, obstacles to document delivery, document integrity, bibliographic control, document archives, etc*.]

1. INTRODUCTION

No library has ever been self- sufficient. The increasing volume and complexity of scientific and technical litreature has already made it impossible for most librarians to purchase all the books and periodicals likely to be needed in their libraries. So in present situation the imlication have moved from a " Holding startegy to an access strtegy".

The development of information technology has greatly enhanced access to information by automating its organization, storage, and retrieval. In contemporary libraries, technologies—such as public access catalogues and online databases—enable users to find information with an efficiency and speed. Despite increases in the scope of

materials available and the ease with which references are found, users often experience long delays in receiving the actual document to which citations refer.

The imbalance between access and supply can potentially be overcome through electronic document delivery—the use of electronic forms of documents and transmission media to automate the entire document delivery process, from the initial selection of a relevant citation, to the final delivery of the document. The creation of electronic document delivery systems can bring the incompletely automated process of document delivery into one integrated system, allowing users, whether they are ILL staff or researchers, to select, request, and obtain primary documents from a variety of sources directly from their workstations.

2. DOCUMENT DELIVERY

2.1. What it is?

Document delivery is one kind of library service. It is nothing but transfer of a document from one source to another source. The sources may be two libraries or library and end user or between document supply centers.

So, document delivery can be refer broadly as the process of providing document to end-user. Specifically, it is defined as the provision of documents as surrogate(eg., photocopy, microform, digital image) that are retained by user.

The request for surrogate of specific document may come directly from the user, or intermediated by a library, or other type of sources which provides the document. Thus, document may include, for example, requests mediated by a library for a photocopy of a document held by another library or by a commercial document supplier, or it may include requests made directly to a commercial document supplier by an end-user.

2.2. Why it is needed?

Since the 1940's, few libraries have been able to collect individually the full range and quantity of materials demanded by their users. They have, by necessity, become heavily dependent upon external sources of materials to supplement the materials held in

their local collections. It is currently estimated that "no library can afford to acquire even half" of all published material.

So, libraries has to depend upon each other to fulfill the needs of the users. The reason for the increasing need of document delivery are :

The proliferation of published information: In the last half century, there has been an exponential growth in the amount of information published annually. Now it is becoming easier day-by-day for anyone to be aware of published documents in his/her narrow field of activity and interest as well as to be alterted about what is to be published in the immediate future. Consequently, the demand for original documents or their copies has been growing at a fast pase.

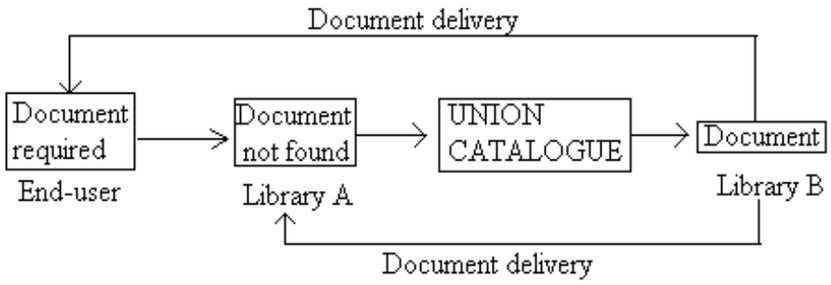
Economic constraints: Funds available for acquisitions, already representing the largest portion of library budgets, have not kept pace with the increase in published information. Libraries cannot afford to acquire, catalogue, and house all the materials that may be required by their patrons.

Rising cost of serials: Along with stagnant budgets, the purchasing power of libraries has been decreased by large increases in the price of academic journals.

2.3. How it can be achieved?

Document delivery system posses various activities i.e; from the selection of the document to the final transfer of the document to the end-users. An user generally depend on other libraries when the particular document is not available in local library.

The whole process of document delivery involves:-



3. CURRENT PRACTICES IN DOCUMENT DELIVERY

Currently, document delivery is not restricted solely to interlibrary loan, or to libraries. Today "interlibrary loan is no longer just library to library. It is also library to commercial source, or commercial source to library". It also may be commercial source directly to the user. Traditional sources of documents and methods for procuring them have multiplied such that there are many ways to obtain requested materials for users. For example, documents may take the form of photocopies or original, requested by telephone, email or ILL subsystem, procured from libraries, document supply centres, or commercial suppliers, and sent by ground mail, courier, or fax.

The various components involved in document delivery may be categorized as:

- Requestors
- Document types
- Document sources
- Functions or process

3.1. Requestors

There are two main requestors in the document delivery environment from which requests can originate:

Library end-users

The library, specifically, the interlibrary loan department or campus document delivery service, acts as mediator on behalf of an end-user.

3.2. Document types

The types of documents that exist in a traditional document delivery environment include all those that are acquired, stored, and supplied by a library for use by its patrons. This includes a wide variety of document types:

Traditional printed matter, such as monographs, serials, newspapers, reference works, government documents, doctoral dissertations and master's theses, and printed, music, rare books and manuscripts, cartographic material, audio-visual material, pictorial documents, including graphic art and photographs, , databases, software, multimedia objects, etc.

3.3. Document sources

The traditional source for documents for interlibrary loan was other libraries, but with the growth of technology for reproduction and bibliographic access, other sources have proliferated. Major document sources currently include libraries, document supply centres, commercial document supply services and publishers.

3.4. Functions

A number of specific functions involve in document delivery process, they are:

- Document selection
- Request procedure
- Document retrieval and
- Document transfer.

3.4.1. Document selection

Document selection involves the activities necessary to determine what document is required to meet a user's particular information or research need.

Current methods: In the current environment, end-users can select or access documents by a wide range of bibliographic resources like: OPACs, commercial online systems, CD-ROM databases, and locally mounted citation databases.

Current obstacles: The first major problem is that this wide range of information resources is not available through one channel in a consistent manner. So user has to be engage with various channel for the same search with different search interface. Furthermore, it is presently difficult to discover the locations of information resources that are available through computer networks.

3.4.2. Request procedure

Once a user has selected and issued a request for a document, the actual process document delivery begins. It involves a set of functions like, verification of the citation, compliance with copyright restrictions, and location of a potential document source or sources. The above functions are then followed by request submission to secure a copy of the document or information.

Current methods: End user can submit his or her request by online or by the use of electronic mail systems, such as ON-TYME II, ALANET, and networks specific to a geographic location, such as ILLINET and DOCLINE.

Current obstacles: In the current document delivery environment, there is a variety of incompatible messaging software to create messages and a variety of telecommunications channels available to exchange them between requestors and document sources.

3.4.3. Document retrieval

Electronic documents have recently begun to appear, such as the journal articles, books etc. But the most common method of document retrieval remains the same i.e., physical retrieval of print materials by library staff arranged on library shelves.

Current obstacles: The major problem is labour involved in fulfilling the work, which is time consuming. The manual operations include:

- physical retrieval of materials from shelves by staff
- processing of materials through circulation and security systems

- manual photocopying of materials for mailing or faxing
- packaging and shipping of materials
- numerous clerical activities throughout the process, such as annotating ILL request forms.

These manual operations greatly reduce the speed with which a request can be filled.

3.4.4. Document transfer

The final delivery of a document involves the forwarding of a document from a document source to a requestor. This is done either by post or fax.

Current obstacles: Regular post is extremely slow compared with the speed with which an item can be selected and requested. The time taken to deliver a document by this method varies with the distance between the requestor and the document source and there is the risk that materials will be lost or damaged in transit.

4. TECHNOLOGIES FOR DOCUMENT DELIVERY

The various technologies and standards can be applied are:

1. Electronic document conversion and generation
2. Storage technologies
3. Communication technologies

4.1. Electronic document conversion and generation

A major problem in shifting from delivery of paper documents to electronic documents is the extensive body of print materials that libraries have collected that must be converted into electronic form. Scanning and optical character recognition (OCR) technologies which automatically put materials into electronic format, can help speed the conversion process. Despite the use of scanning and OCR, the enormous volume of documents to be converted will make document conversion an expensive, time-consuming, and labour intensive. Lots of retrospective conversion projects are going on. A major obstacle for

electronic document delivery in any form, however, is the issue of copyright—scanning existing copyrighted material without permission violates the copyright.

Though the above technologies convert existing paper documents into electronic form, there is an increasing trend to generate documents in electronic format. This will be true during all stages of their development, from initial creation on word processors, through editing, to final typesetting or on-screen display. International standards available for document representation include Office Document Architecture (ODA), Standard Page Description Language (SPDL), and Standard Generalized Markup Language (SGML), as well as many proprietary formats such as PostScript.

4.2. Storage technologies

Mass storage devices will be required to support the large image and electronic document databases that will form the basis of electronic document delivery systems. The primary candidates for these databases, already used to some extent, are optical storage devices, such as CD-ROM, WORMs, and Magneto-optical discs, that possess greater storage density and are less sensitive to deterioration or contamination than magnetic media.

4.3. Communications technologies and standards

A number of communications technologies and standards are also emerging that will support the digital transmission of electronic documents. Communications options include high-speed LAN standards such as Fibre Distributed Data Interface (FDDI), Integrated Services Digital Network (ISDN).

One way in which such interconnectivity can be achieved is by basing applications on the standards for Opens Systems Interconnection (OSI). OSI refers to the automated procedures (protocols) that will allow the computers of different manufacturers to communicate with each other and share resources. However, because of the predominance of TCP/IP on major networks, it is likely that real applications will have to support protocols in both the OSI and TCP/IP suites.

5. ISSUES IN ELECTRONIC DOCUMENT DELIVERY

The shift from paper-based information systems to integrated electronic document delivery systems will have a strong impact upon established patterns and processes associated with information production, access, and distribution. While there are many issues that will inevitably arise during this transition, the two most salient are intellectual property rights in the electronic environment and the impact upon the scholarly communication system. This chapter provides a brief overview of these two major issues, as well as a number of other important issues such as document delivery in developing nations, electronic document integrity, bibliographic control, and the need for electronic document archives.

5.1. Intellectual property rights

One of the largest issues in electronic document delivery is that of intellectual property rights. The existing body of laws governing intellectual property rights, such as patents, trade secrets, competition, and copyright, has not kept pace with rapid advances in information technology; basic assumptions that were true in a paper-based environment are no longer true in an electronic environment. Of particular interest to libraries are those intellectual property laws protecting original works of authorship, known as copyright laws. The seriousness of the issue is such that "the copyright system has become a nightmare: issues such as acquisition of rights for use of material, fair use, and even determination of the copyright status of materials has effectively paralyzed progress in innovations related to dissemination of scholarly information".

5.2. Challenges to electronic document delivery

Although electronic document delivery can be used to send materials to remote locations, one of the primary pre-conditions to its use is the existence of an adequate telecommunications infrastructure. Electronic mail, for example, is considered to be the network application that will play a large role in the delivery of electronic documents. The use of electronic mail in developing countries has identified a number of barriers to its implementation. These barriers fall into four general categories: technological, economic, political, and sociocultural.

1. Technological barriers: the lack of the necessary technology to receive, store and transmit data. This lack of necessary technology includes outdated computer hardware and software, limited use of microcomputers, few instances of LAN connectivity or connections between remote computer sites the lack of reliable land-based communication systems. The telephone system is the medium most frequently used for data transfer in developing nations, but in many places telephone systems are scant or non-existent. Furthermore, the transmission quality that they provide for audio and digital data in these countries is poor.

2. Economic barriers: Severe economic conditions also restrict the development of computer related services. These conditions are manifested in a poorly trained labour force, illiteracy, high unemployment, lack of capital resources for investment, and crushing foreign debt. The purchase of the equipment necessary for computer/telecommunications capabilities is, therefore, beyond the reach of many less developed nations. Furthermore, the relative cost of manual methods is lower than investing in computer and telecommunications equipment.

3. Political barriers: The political barriers to email, and other network services, stem from both internal and external nationalistic and protectionistic forces. For example, industrialized countries view information, as well as information technologies, as a valuable national resource; the export of information and information technology are often restricted for both economic and national security reasons.

4. Sociocultural barriers: Sociocultural barriers involve the problems of adapting foreign technologies to indigenous patterns. New technologies will have a profound impact on all levels of society. To use integrated document delivery systems effectively, individuals will have to overcome fear of computers, both because of the lack of computer literacy, as well as fear of displacement. While these factors do exist in industrialized societies, the fact that computer and telecommunications technologies have not been designed for the particular needs of developing countries may make the impact more severe.

5.3. Other concerns

Several other issues that will arise as the management and delivery of electronic documents proliferates are document integrity, bibliographic control, and document archives.

5.3.1. Document integrity

In paper-based environments, the uniformity and consistency of publications is more or less taken for granted. The content and layout of a particular paper document remains identical to all others in the same edition. Such stability is due to the inherent qualities of paper and of reprographic technology, as well as to guaranties provided by the publisher that all instances of a particular document are identical.

Electronic documents, on the other hand, are malleable to an almost infinite degree; they are not fixed in a permanent form, but can be edited, truncated, re-arranged, expanded, set in different fonts and layouts, and experience any other number of modifications. Through the intervention of the author, or worse, unauthorized persons, such documents could vary from instance to instance, making any particular "final form".

5.3.2. Bibliographic control

Bibliographic control of electronic documents will be much more difficult because of the malleability of this form of document. With paper-based documents, changes between successive versions of a single work are, for the most part, authorized, fixed, and recorded as separate editions. With electronic documents, by contrast, any number of authorized and unauthorized versions of a document may be created. Furthermore, these documents may exist in several forms, for example, as a scanned image, as OCR'ed text, or represented in ODA, SPDL, or SGML format. If these documents will be available within an electronic document delivery system, then some form of bibliographic control will have to be maintained. It is difficult for librarians to gain bibliographic control over documents for which there may be several versions, each in several formats.

5.3.3. Document archives

Electronic documents will need to be stored in perpetuity in the same way that paper documents are stored, even after they lose economic value. Currently, this is the role of large research libraries and legal deposit libraries. The same scheme of legal deposit must be extended to include electronic documents. Additional concerns arise in the long-term storage of electronic documents that do not arise with paper documents; that is, upward system compatibility must be ensured so that information in obsolete data formats continues to be available.

6. MANAGING DOCUMENT DELIVERY SYSTEM

Enormous increase of publications, price and forms of documents lead to the need to document delivery system. Electronic document delivery system made it easy to retrieve the document irrespective of the place.

To run any system it has to be managed properly. In case of document delivery system, it may be in electronic media or manual has to be handled properly so that the end-user can get its document in time. For that at every step while running document delivery system certain things has to be checked and maintain it. There are some points that can help to run the system efficiently either for electronic or manual document delivery system. These are :-

1. What are all available sources for retrieving the documents.
2. Is there any alternative form of documents available.
3. Check whether users request is relevant or not.
4. Make a list of all the request procedure available and provide the most used user interface or search engine for submitting the query or searching the catalogue.
5. Once the user submits its request check whether the selection of the document has been done exhaustively and relevant.
6. In electronic publishing, what download facilities each site provides and the cost involved to subscribe it.

7. After getting the document or the source of the document check whether it has reached to its user or not.

With the above mentioned criteria there are certain more general things which is required to run document delivery system. These are:

1. Check the cataloguing system of the libraries has been upgraded regularly.
2. The union catalogue is also to be upgraded regularly.
3. Consider that there is better understanding among the libraries and other information

   centres.
4. Check there is proper agreement for delivering the document in time.
5. Maintain a record for all the request if the users and document delivered.
6. While downloading the documents available may raise the issue of copyright which has be considered.

By considering all these points there is every possibility to manage the document delivery system efficiently.

7. CONCLUSION

Integrated electronic document delivery systems will form an essential part of the electronic libraries that may emerge as the principal source of information in the coming decades. These systems will increase the efficiency with which primary documents can be provided to end-users allowing them to select, request, and obtain documents directly from their local computers. Such systems will be necessary to correct the growing disparity between bibliographic access and document supply, and to increase access to an exponentially expanding body of information.

The various factors to be considered for the development of electronic libraries are:

- the need for the resolution of copyright questions such that electronic documents may be created and freely distributed throughout an electronic

library in a manner that is equitable for both information producers and information consumers

- the need to develop mechanisms for bibliographic control of electronic materials to ensure access to a potentially very large and very dispersed body of materials
- the potential resistance to change of long-standing operational and administrative traditions within library and publishing organizations. The shift to electronic systems "will require basic changes in the way individuals and institutions think and do business"
- the necessity to create standards for linking abstracting and indexing record with primary material. A related problem is the need to first standardize abstracting and indexing records themselves as has been done for books through the MARC record
- the need to develop the infrastructure sufficient to support electronic document delivery. This means not only the development of high-capacity backbone networks, but the extension of such capacity all the way to the user's desktop. On the desktop, furthermore, there must be equipment suitable to support an EDD system, such as high resolution displays, large capacity storage options, and laser printers that provide the resolution and speed sufficient for EDD applications.

Clearly, there is much groundwork to be done. Yet, it is only through the application of standards and technologies such as those discussed in this paper—and the concomitant solution of the many technical, social, political, and legal issues involved—that working electronic document delivery systems will appear. The present movement within the international academic community to create information networks offers the opportunity for such application: it can serve as a catalyst, and a focal point, for the integration of these technologies and the development of electronic document delivery systems.

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